

535, 587
10/535587

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/046746 A1

(51) International Patent Classification⁷: **G01R 33/563**

(NL). VAN DEN BRINK, Johan, S. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(21) International Application Number:
PCT/IB2003/004794

(74) Agent: COHEN, Julius, S.; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(22) International Filing Date: 27 October 2003 (27.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02079774.2 18 November 2002 (18.11.2002) EP

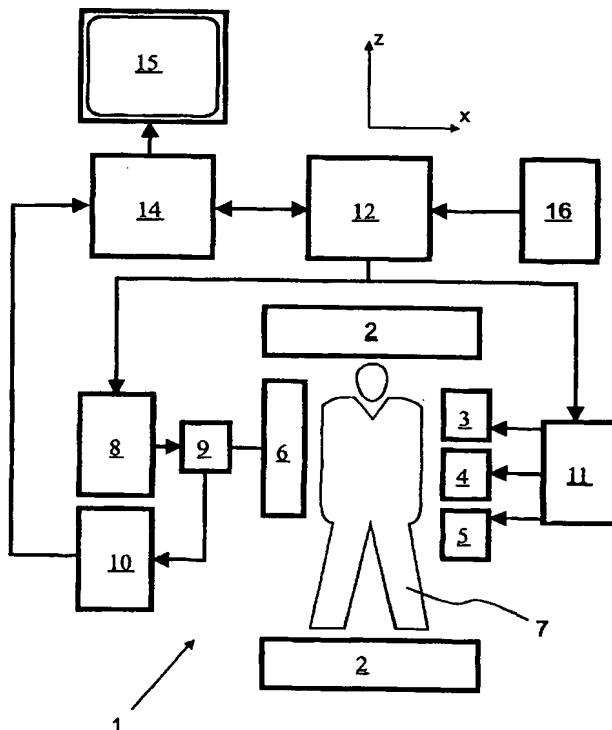
(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: MAGNETIC RESONANCE METHOD AND DEVICE



(57) Abstract: The invention relates to a method for magnetic resonance imaging (MRI) of at least a portion of a body placed in a stationary and substantially homogeneous main magnetic field. The method comprises the steps of subjecting the body to a diffusion-weighting sequence (DW1), generating a train of MR echoes (E1, E2, E3, E4, E5) by an imaging sequence (EPI1), and measuring this train of MR echoes. These steps are repeated until a complete imaging data set with a sufficient number of phase-encoding steps is measured. Thereafter, the imaging data set is corrected for macroscopic motions by means of an individual phase-correction of each train of MR echoes. Finally, an image is reconstructed from the imaging data. In order to provide a method for diffusion-weighted imaging, which requires a minimum additional measurement time for determining the phase errors of the imaging signals and which also guarantees a robust compensation of image artifacts caused by macroscopic motions of the body of the examined patient, the invention suggests to select the phase-encoding scheme of the imaging sequence such that each train of MR echoes (E1, E2, E3, E4, E5) comprises at least one initial MR navigator echo (E1), which forms an integral part of the imaging data set,

wherein the phase-correction is derived from this MR navigator echo.

WO 2004/046746 A1